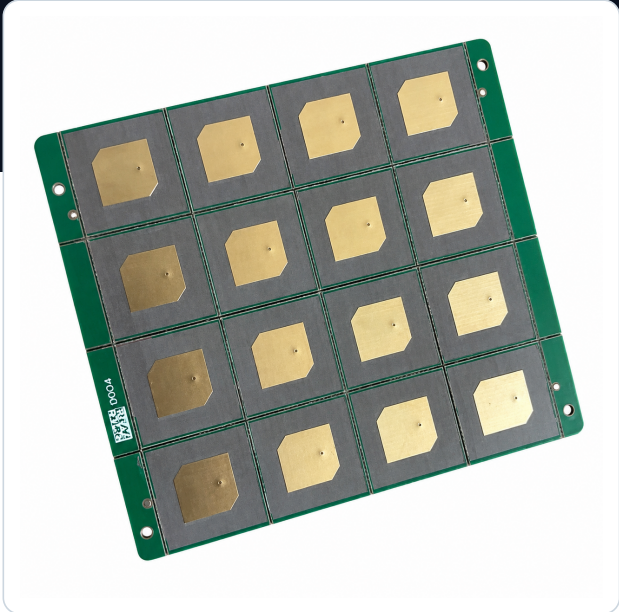


# 8.425 GHz RHCP Patch Antenna

Compact circularly polarized antenna hardware for TT&C, CubeSat, SDR, and microwave integration work.



Manufacturing panel shown; product is supplied as an individual 20 x 20 mm element.

|                   |                |                    |              |
|-------------------|----------------|--------------------|--------------|
| NOMINAL FREQUENCY | BROADSIDE GAIN | MEASURED -10 DB BW | 3 DB RHCP BW |
| 8.425 GHz         | 6.5 dBi        | 800 +/- 30 MHz     | ~200 MHz     |
|                   | nominal        | VNA                | simulated    |

PRODUCT OVERVIEW

A compact single-feed RHCP patch developed around 8.425 GHz. The antenna combines a small 20 mm square outline with wide measured impedance bandwidth, making it a practical reference element for bench links, payload experiments, and custom embedded RF integration.

**Engineering value:** measured impedance matching is supplied alongside electromagnetic simulation for axial ratio, gain, and radiation behavior.

TYPICAL APPLICATIONS

- X-band telemetry, tracking and command experiments
- CubeSat and compact payload prototyping
- SDR and microwave laboratory links
- Custom antenna and enclosure integration studies

AVAILABILITY

Available as engineering prototype hardware for laboratory evaluation. Frequency, connector, outline, and integration adaptations can be quoted for custom RF programs.  
**Sales contact:** [alessandro.ghezzo@outlook.com](mailto:alessandro.ghezzo@outlook.com)

MECHANICAL & INTERFACE

|                        |                           |
|------------------------|---------------------------|
| Polarization           | RHCP                      |
| Feed impedance         | 50 ohm                    |
| Connector              | Vertical SMA female       |
| Construction           | 2-layer low-loss PTFE PCB |
| Dimensions             | 20 x 20 x 1.53 mm         |
| Operating temperature* | -20 to +70 deg C          |
| Storage temperature*   | -40 to +85 deg C          |

**\*Provisional environmental guidance.** These temperature limits have not been environmentally qualified. Contact Austral Microwaves for mission-specific screening, materials review, or enclosure integration.

# Performance data

Measured VNA matching and electromagnetic simulation are presented separately. Radiation performance is engineering data and is not a certified antenna-range qualification.

## ELECTRICAL PERFORMANCE

|                                  |                     |
|----------------------------------|---------------------|
| Nominal operating frequency      | 8.425 GHz           |
| Measured S11 near resonance      | -12 dB              |
| Measured -10 dB impedance BW     | 800 +/- 30 MHz      |
| Simulated S11 at 8.425 GHz       | -22.14 dB           |
| Simulated -10 dB impedance BW    | 927.3 MHz           |
| Minimum axial ratio at broadside | 0.55 dB simulated   |
| 3 dB axial-ratio bandwidth       | 218.7 MHz simulated |
| Broadside gain                   | 6.5 dBi nominal     |

**Data basis**

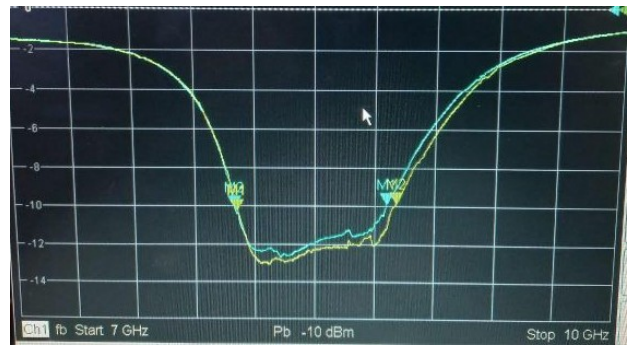
**Measured:** reflection coefficient and impedance bandwidth on prototype hardware using a VNA.

**Simulated:** axial ratio, gain, polarization ratio, and radiation-pattern behavior.

Back-lobe attenuation: -12.32 dB simulated.  
RHCP polarization ratio at broadside: 35.75 dB simulated.

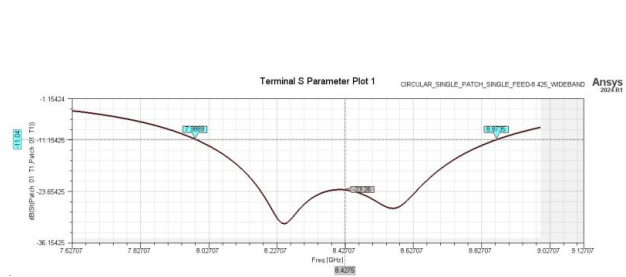
**Qualification:** intended for experimentation and prototyping; not qualified for flight.

Measured S11



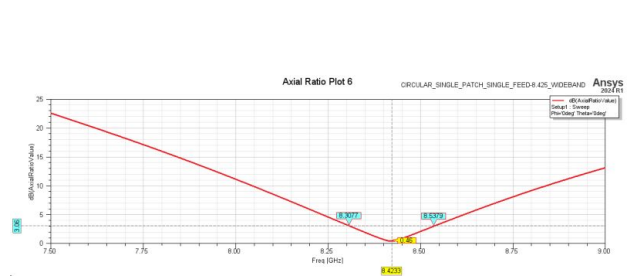
Prototype VNA response; measured matching bandwidth is 800 +/- 30 MHz.

Simulated S11



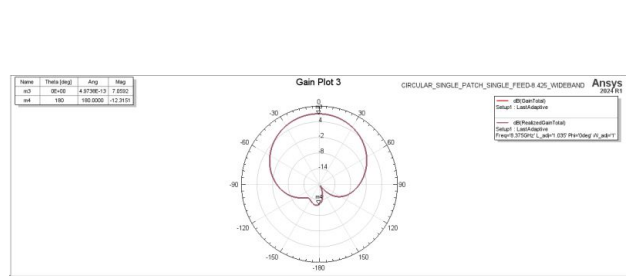
Simulated resonance at 8.425 GHz with -22.14 dB reflection coefficient.

Simulated axial ratio



Minimum 0.55 dB at broadside; 218.7 MHz simulated 3 dB bandwidth.

Simulated gain pattern



Broadside-oriented RHCP radiation behavior.